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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/991,478	11/09/2001	Paul Mueller	CH2M.07	3164

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EXAMINER

FORTUNA, ANA M

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/991,478

Applicant(s)
Muller et al

Examiner
Ana Fortuna

Art Unit
1723



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr 18, 2002
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8, 10, 11, and 13-16 is/are rejected.
- 7) ☒ Claim(s) 5, 9, and 12 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 U.S.C. § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedek et al (6,027,649) (hereinafter '649) in view of Anselme et al (5,364,534)(hereinafter '534). Benedek ('649) discloses a method of treating water in a membrane system including a membrane disposed in a process tank, having a raw water inlet for providing a granular material or adsorbent, etc. (element 12, 2, 8, 6, and 4). The inlet for connected to an adsorbent source providing adsorbent within the tank containing the membrane(Figure 1, column 2, lines 50-68, though column 3, lines 1-65). Ion exchange resin is not disclosed in reference '649, however ion exchange resins are well recognized in the art as polar adsorbents. It would have been obvious to one skilled in the art at the time the invention was made to use adsorbent resins in the process and apparatus of reference '649, e.g. for removing contaminants, e.g. organic and inorganic impurity from the water. Reference to Anselme ('534) further discloses a process for purifying water by a process including providing adsorbents or ion exchange resins to the water to be treated by the

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membrane (abstract, column 2, lines 11-13). It would have been further obvious based on the teaching of '534 to provide the apparatus of '649 with a source of ion exchange resin for treating the water, or alternatively, provide the membrane directly in the tank containing the resin, as suggested by '649. Regarding claim 4, separating the resin from the water by the membrane, recirculating to the system and discharging in a gravity separator is disclosed in reference '534 (stream 5, separator 1). As to claim 16 the agitation can be inherent of the action of introducing gas bubbles, disclosed in reference '639 (element 16, 14).

3. Claims 2, 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedek et al (6,027,649) (hereinafter '649) in view of Anselme et al (5,364,534)(hereinafter '534) as applied to claims 1, 4, 10, 16 above, and further in view of Connor et al (5,728,302)(hereinafter '302). References '649 and '534 fail to disclose the ion exchange resin having magnetic properties. Connor ('302) suggest using ion exchange resin having magnetic properties for treating water to remove contaminants, e.g. arsenates, barium, fluoride, selenites (abstract, column 3, lines 46-52, claim 5, lines 27-36, column 6, lines 49-68, and column 4, lines 10-21). It would have been obvious to one skilled in the art at the time the invention was made to use ion exchange resin in a mixture with water to be treated by a separation membrane, and further select ion exchange resin having magnetic properties, e.g. for removing specific contaminants, as suggested by Connor. As to claim 3, agitating e.g. by injecting gas bubbles is disclosed in reference '649 (column 3, lines 45-65).

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4. Claims 6-8, 11, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedek et al (6,027,649) (hereinafter '649) in view of Anselme et al (5,364,534)(hereinafter '534)and Connor et al ('302) as applied to claims 1, 2, 3, 4, 10, 16 above, and further in view of Kochen et al (5,595,666).

Benedek et al ('649) and Anselme et al ('534) and Connor ('302) fail to disclose regeneration and reuse of the magnetic ion exchange particles. Reference to Kochen('666) teaches regeneration of magnetic ion exchange resin use in removing contaminants from water, by treating the resin with KOH or NaOH (abstract, column 5, last paragraph, column 6, lines 1-21). Reusing the resin after regeneration is also disclosed (column 5, last paragraph). As to claim 9 regenerating resin as specify by manufacturer, and depending on the specific contaminants retained by the resin. It would have been obvious to one skilled in the art at the time the invention was made to use magnetic resin, e.g. to remove metal ions from water, and further remove the metal contaminants from the resin in a regeneration process before reusing the resin in the process. It would have been obvious to one skilled in the art at the time the invention was made to treat the removed stream from the tank, containing the resin with the adsorbed contaminants, to remove the contaminants and further recycle the resin or adsorbent back to the process, as suggested by reference '666 in a water treatment process.

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Allowable Subject Matter

4. Claims 5, 9, 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach or fairly suggest the process or apparatus combined with a high gradient magnetic filter for removing the magnetic resin.

5. Reference 3,996,1312, cited by applicant, teaches ion exchange resins as polar adsorbents (column 6, lines 39-48).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana Fortuna whose telephone number is (703) 308-3857. The examiner can normally be reached on Monday-Friday from 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached on (703) 308-0457. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 for regular responses, and (703)872-9311 for after finals.

Ana Fortuna

January 30, 2003



ANA FORTUNA
PRIMARY EXAMINER